

CENTER FOR NEURAL INTERFACES

CENTER

Established in 1995, the Center transforms the neuroprosthetic technologies developed by the Moran Center for Applied Visual and Neural Science into prototype systems for the subsequent commercialization for use in neuroscience research and clinical application.

TECHNOLOGY

The Center has invented silicon-based arrays of microelectrodes that can either listen in on or talk directly to hundreds of neurons simultaneously. This can now be done on a chronic basis in awake and freely behaving animals. The Center has developed surgical tools and techniques that allow these high-density microelectrode arrays to be implanted in central and/or peripheral nervous systems. It has also developed data acquisition systems that permit the large amounts of data recorded by these microelectrode arrays to be stored and analyzed in PC-class computers. It has written software that is used to acquire and analyze these neural signals. The long-range goal of the Center is to use these new neural interfaces as therapies for disorders of the nervous system. Ultimately, these systems may provide limited, but functional sensory restoration in individuals with profound blindness or deafness, and enhanced motor function to individuals with high spinal cord injuries.

ACCOMPLISHMENTS

Five inventions were disclosed. Several prototypes from new inventions have been developed including a 16-channel field potential amplifier; completed pilot experiments with a 100-electrode array with varying length electrodes used to interface with the peripheral nervous system. A prototype of a high-density array (100 μ m sensor distance) was completed. Pilot studies of the human cortex in quadriplegic and paraplegic are in progress to validate the reorganization of the motor cortex following spinal injuries. **Bionic Technologies, Inc.**, the Center spin-off company, has undertaken the commercialization effort of the prototypes developed at the Center to the international research community. Since its inception the company has already received three Phase I and two Phase II SBIR awards, a total of \$1.7 million in federal support.

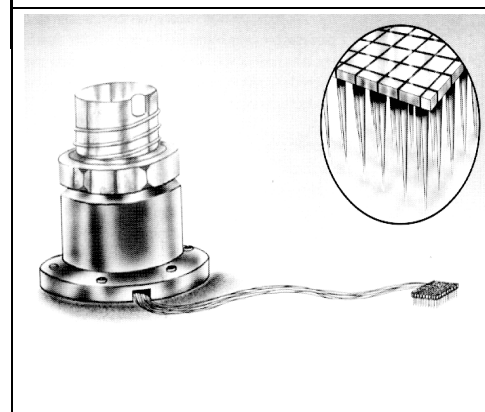
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Can You I imagine...

... a miniature camera whose video output is fed to the visual cortex of a sight impaired person to provide artificial vision with sufficient resolution for key object identification?

THE CENTER WAS ESTABLISHED TO TRANSFORM THE NEUROPROSTHETIC TECHNOLOGIES DEVELOPED BY THE MORAN LABORATORIES FOR APPLIED VISUAL AND NEURAL SCIENCE INTO PROTOTYPE SYSTEMS FOR FUTURE CLINICAL APPLICATIONS.



The array probe and connecting cable assembly